

**REMARKS**

Applicants respectfully request reconsideration of the present application in view of the reasons that follow. Claims 41, 42, 45-50, 53-58 and 61-75 are pending in the present application.

**I. Rejection of Claims Under 35 U.S.C. § 102(a)**

In Sections 3 and 7 of the Office Action, Claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58, and 61-75 were rejected under 35 U.S.C. 102(a) as being anticipated by “On Design Criteria and Construction of Non-coherent Space-Time Constellations” by Borran *et al.* (Borran 1). Applicants respectfully traverse the rejection because Borran 1 is not prior art to the present application under 35 U.S.C. 102(a). Applicants further reserve the right to present arguments in the future related to the failure of Borran 1 to anticipate the claimed subject matter of the present application.

35 U.S.C. 102(a) states that “[a] person shall be entitled to a patent unless ... the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent.” Applicants submit that Borran 1 is not “by others,” and thus, is not prior art under 35 U.S.C. 102(a).

Borran 1 lists four authors: Mohammad Jaber Borran, Ashutosh Sabharwal, Behnaam Aazhang, and Don Johnson. The present application lists four inventors: Mohammad Jaber Borran, Ashutosh Sabharwal, Behnaam Aazhang, and Prabodh Varshney. Thus, three of the authors of Borran 1 are also listed as inventors of the present application: Mohammad Jaber Borran, Ashutosh Sabharwal, and Behnaam Aazhang. Thus, there should be no issue that these individuals are not “others.” Don Johnson is listed as an author of Borran 1, but not as an inventor of the present application. Applicants provide herewith a Declaration signed by Don Johnson stating that he is not “an inventor, either solely or jointly, of the subject matter claimed therein.” Prabodh Varshney is listed as an inventor of the present application, but not as an author of Borran 1. Applicants provide herewith a Declaration signed by Prabodh Varshney stating that, though he is not a named author of Borran 1, “the material ... claimed

in the above-referenced patent application was derived from subject matter which was invented by myself jointly with Mohammad Jaber Borran, Ashutosh Sabharwal, and Behnaam Aazhang, and that we are the sole inventors of said subject matter.” In view of this evidence, Borran 1 is not “by others,” and thus, is not prior art to the present application under 35 U.S.C. 102(a). Therefore, Applicants respectfully request withdrawal of the rejection of Claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58, and 61-75 under 35 U.S.C. 102(a).

**II. Rejection of Claims Under 35 U.S.C. § 102(f)**

In Sections 4 and 9 of the Office Action, Claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58, and 61-75 were rejected under 35 U.S.C. 102(f). 35 U.S.C. 102(f) states that “[a] person shall be entitled to a patent unless ... he did not himself invent the subject matter sought to be patented.” Applicants respectfully traverse the rejection because the inventors of the present application invented the subject matter sought to be patented.

As discussed in Section I. above, three of the authors of Borran 1 are also listed as inventors of the present application: Mohammad Jaber Borran, Ashutosh Sabharwal, and Behnaam Aazhang. Thus, there should be no issue that these individuals invented the subject matter sought to be patented. Don Johnson is listed as an author of Borran 1, but not as an inventor of the present application. Applicants provide herewith a Declaration signed by Don Johnson stating that he is not “an inventor, either solely or jointly, of the subject matter claimed therein.” Prabodh Varshney is listed as an inventor of the present application, but not as an author of Borran 1. Applicants provide herewith a Declaration signed by Prabodh Varshney stating that, though he is not a named author of Borran 1, “the material ... claimed in the above-referenced patent application was derived from subject matter which was invented by myself jointly with Mohammad Jaber Borran, Ashutosh Sabharwal, and Behnaam Aazhang, and that we are the sole inventors of said subject matter.” As a result, the inventors of the present application invented the subject matter sought to be patented. Therefore, Applicants respectfully request withdrawal of the rejection of Claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58, and 61-75 under 35 U.S.C. 102(f).

**III. Rejection of Claims Under 35 U.S.C. § 102(a)**

In Sections 6 and 8 of the Office Action, Claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58, and 61-75 were rejected under 35 U.S.C. 102(a) as being anticipated by “Constellations for Imperfect Channel State Information at the Receiver” by Borran et al. (Borran 2). Applicants respectfully traverse the rejection because Borran 2 is not prior art to the present application under 35 U.S.C. 102(a). Applicants further reserve the right to present arguments in the future related to the failure of Borran 2 to anticipate the claimed subject matter of the present application. Applicants submit that Borran 2 is not “by others,” and thus, is not prior art under 35 U.S.C. 102(a).

Borran 2 lists three authors: Mohammad Jaber Borran, Ashutosh Sabharwal, and Behnaam Aazhang. The present application lists four inventors: Mohammad Jaber Borran, Ashutosh Sabharwal, Behnaam Aazhang, and Prabodh Varshney. Thus, the three authors of Borran 2 are also listed as inventors of the present application: Mohammad Jaber Borran, Ashutosh Sabharwal, and Behnaam Aazhang. Thus, there should be no issue that these individuals are not “others.” Prabodh Varshney is listed as an inventor of the present application, but not as an author of Borran 2. Applicants provide herewith a Declaration signed by Prabodh Varshney stating that, though he is not a named author of Borran 2, “the material … claimed in the above-referenced patent application was derived from subject matter which was invented by myself jointly with Mohammad Jaber Borran, Ashutosh Sabharwal, and Behnaam Aazhang, and that we are the sole inventors of said subject matter.” In view of this evidence, Borran 2 is not “by others,” and thus, is not prior art to the present application under 35 U.S.C. 102(a). Therefore, Applicants respectfully request withdrawal of the rejection of Claims 41, 42, 45, 46, 49, 50, 53, 54, 57, 58, and 61-75 under 35 U.S.C. 102(a).

**IV. Rejection of Claims 47, 48, 55, and 56 Under 35 U.S.C. § 103(a)**

In Section 10 of the Office Action, Claims 47, 48, 55, and 56 were rejected under 35 U.S.C. 102(b) as being anticipated by Borran 1 in view of U.S. Patent 7,269,436 to Won (Won). As discussed in Section I. above, Applicants respectfully submit that Borran 1 is not

prior art to the present application under 35 U.S.C. 102(a). Applicants respectfully traverse the rejection because Won fails to teach, suggest, or disclose all of the elements of Claims 47, 48, 55, and 56, which depend from one of Claims 41 and 49.

Independent Claims 41 and 49 recite in part:

selecting a signal constellation from a plurality of signal constellations based on the determined characteristic, the selected signal constellation including a plurality of constellation points, the plurality of constellation points selected by maximizing a minimum Kullback-Leibler distance between the plurality of constellation points;

Won describes a “method and apparatus for allocating a power in a multiple-input multiple-output communication system.” (Abstract) Won teaches nothing whatsoever about selecting constellation points or maximization of any distance between the plurality of constellation points. As a result, Won fails to teach, suggest, or describe all of the elements of Claims 41 and 49.

An obviousness rejection cannot be properly maintained where the reference used in the rejection does not disclose all of the recited claim elements. As a result, Applicants respectfully request withdrawal of the rejection of 47, 48, 55, and 56, which depend from one of Claims 41 and 49.

**V. Rejection of Claims 47, 48, 55, and 56 Under 35 U.S.C. § 103(a)**

In Section 11 of the Office Action, Claims 47, 48, 55, and 56 were rejected under 35 U.S.C. 102(b) as being anticipated by Borran 2 in view of U.S. Patent 7,269,436 to Won (Won). As discussed in Section III. above, Applicants respectfully submit that Borran 2 is not prior art to the present application under 35 U.S.C. 102(a). As discussed in Section IV. above, Applicants respectfully submit that Won fails to teach, suggest, or disclose all of the elements of Claims 47, 48, 55, and 56, which depend from one of Claims 41 and 49. An obviousness rejection cannot be properly maintained where the reference used in the rejection does not disclose all of the recited claim elements. As a result, Applicants respectfully

request withdrawal of the rejection of 47, 48, 55, and 56, which depend from one of Claims 41 and 49.

**VI. Request for Information**

In Section 5 of the Office Action, the Examiner requested information under 37 C.F.R. 1.105(a). Specifically, the Examiner requested information regarding the publication of Borran 1. The Examiner further states that “Applicant has provided additional documents in the response filed 1/18/2008 but did not provide information regarding the publication of this document.” Applicants respectfully disagree. With the Response filed January 18, 2008, Applicants included an exhibit A which showed a webpage related to Journal publications by one of the inventors of the present application and authors of Borran 1 and Borran 2, Ashutosh Sabharwal. The provided exhibit lists Borran 1 and shows a publication date of October 2003. With the Response filed January 18, 2008, Applicants additionally included an exhibit B that showed a webpage associated with the IEEE organization that also shows a publication date of October 2003. In the response to the current Office Action, Applicants’ have identified the Rice Digital Scholarship Archive database that shows a publication date of July 20, 2002 as cited by the Examiner. At this time, Applicants do not have sufficient information to refute this publication date. However, Applicants reserve the right to present evidence that July 20, 2002 was not the actual publication date of Borran 1. Applicants respectfully submit that no additional information related to publication of Borran 1 is readily available.

The Examiner also specifically requested information regarding “all published documents regarding the presentation made at the 2002 IEEE International Symposium on Information Theory.” Applicants include an exhibit C which is a copy of the Proceedings of the IEEE International Symposium on Information Theory (ISIT) 2002 Conference. Exhibit C includes an indication of a presentation by Mohammad Jaber Borran, Ashutosh Sabharwal, Behnaam Aazhang, and Don H. Johnson, titled On Design Criteria and Construction of Noncoherent Space-time Constellations on Monday June 30, 2002 in Lausanne, Switzerland (page XI). Exhibit C further includes a copy of a one-page summary of the presentation published at page 74 of the Proceedings of the ISIT 2002 Conference. Applicants respectfully

submit that no additional information regarding any published documents regarding the presentation made at the 2002 IEEE International Symposium on Information Theory is readily available.

Applicants believe that the present application is in condition for allowance.  
Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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FOLEY & LARDNER LLP  
Customer Number: 23524  
Telephone: (608) 258-4263  
Facsimile: (608) 258-4258

By



Callie M. Bell  
Attorney for Applicant  
Registration No. 54,989